Improving weed control for the promising future crop *Taraxacum koksaghyz* as an alternative source for natural rubber

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The rubber tree *Hevea brasiliensis* is currently the only commercial source of natural rubber, whose worth at the world market for rubber consumer products was $200 billion in 2011. Besides the production of goods like medical equipment, textiles and household items, 70 % of the yearly production is expended by the tire industry. Whilst this market is predicted to grow further but the rubber yield of *H. brasiliensis* has reached its growth limit (500-1500 kg ha^{-1} a^{-1}), searches for alternative sources for natural rubber are in the current focus of the industry. Those should unify several important characteristics like fast growth and annual harvest and allow production of high quality rubber that's easy to extract.

A very promising candidate is *Taraxacum koksaghyz* - a dandelion originating from Kazakhstan. However, it's able to grow also under central European climate conditions, which would facilitate cultivation in Europe to e.g. reduce transportation costs. Besides being a more economically alternative to *H. brasiliensis*, the *T. koksaghyz* rubber is not causing any allergic reactions like the rubber from *H. brasiliensis*. Nevertheless, the rubber types are biochemically very similar. Advantageously, the dandelion is annual and the whole plant can be harvested to gain the rubber which is stored in the roots.

T. koksaghyz has already been cultivated in the Soviet Union from the 1930ies till the 1950ies and was also used as an emergency source during WWII in many countries. Several research projects are presently working on improving and optimizing *T. koksaghyz* to make it an additional and especially economic source of natural rubber. As a result of the BMBF-funded project TARULIN one of the partners - Continental Germany - already started with producing prototype tires consisting of *T. koksaghyz* rubber (recently presented at the IAA 2014). This underlines the practicability of this enterprise but there is an urgent need for further investigations on *T. koksaghyz* cultivation and the rubber processing to reach a commercial level of productivity.
The EVITA project is a consortium of Russian and German partners from university, national research institutes and rubber industry. The focus of our task lies on enhancing the productivity of the crop by introducing an herbicide resistance to *T. koksaghyz* as it is known that especially early overgrowing by weeds is a major reason for low crop yield. This aim will be reached by the new CRISPR/Cas-method for introducing specific DNA mutations into the genomic sequence coding for the enzyme acetohydroxyacid synthase (AHAS) which is a well described target for imidazolinone herbicides.